Precalc Warm Up # 12-1

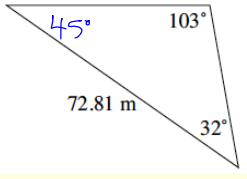
Accurately sketch each triangle, then solve and find area. (nearest 10th)

1. a = 10
   b = 6
   c = 13

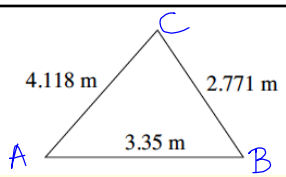
2. a = 6
   c = 5
   C = 32°

HW Questions, p. 304 (bottom of page, from Friday)

1. The diagram shows a triangular building plot. The distances are given in metres. Find the length of the two remaining sides of the plot giving your answers correct to the nearest hundredth of a metre. Law of Sines.

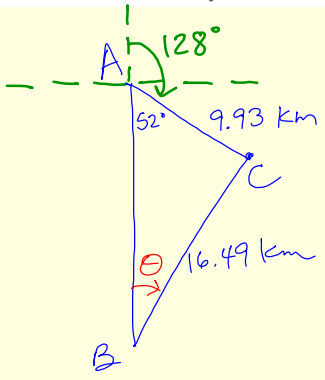


3. A triangular metal brace is part of the structure of a bridge. The lengths of the three parts are shown in metres. Find the angles of the brace.



Law of Cosines
find ∠B first

5. Ayton is directly north of Byford. A third town, Canfield, is 9.93km from Ayton on a bearing of 128° true. The distance from Byford to Canfield is 16.49km. Find the bearing of Canfield from Byford.

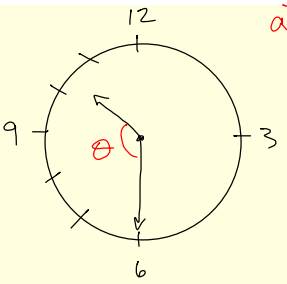


Use Law of Sines

7. A town clock has 'hands' that are of length 62cm and 85cm.

(a) Find the angle between the hands at half past ten.

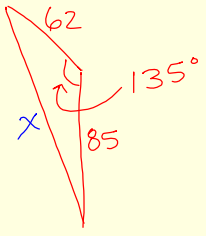
(b) Find the distance between the tips of the hands at half past ten.



a) $\frac{180}{6} = 30°$ between each hour

$\theta = 4.5(30) = 135°$

b)

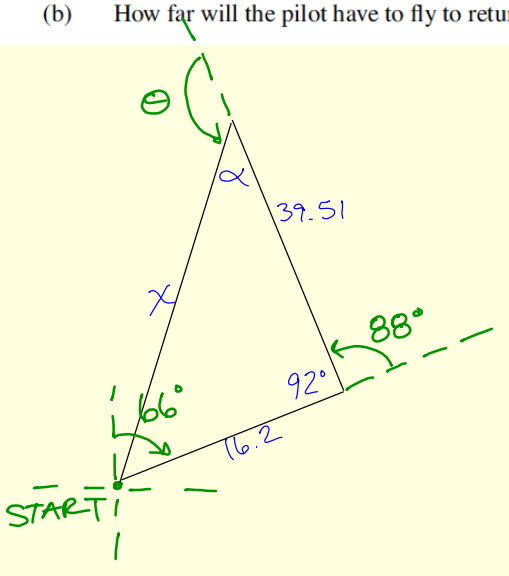


Use Law of Cosines

9. An aircraft takes off from an airstrip and then flies for 16.2 km on a bearing of 066° true. The pilot then makes a left turn of 88° and flies for a further 39.51 km on this course before deciding to return to the airstrip.

(a) Through what angle must the pilot turn to return to the airstrip?

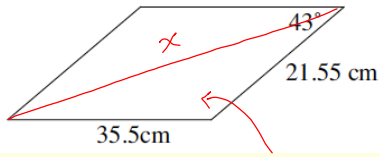
(b) How far will the pilot have to fly to return to the airstrip?



a) find α using Law of Cosines, then $\theta = 180 - \alpha$

b) find x with Law of Cosines or Law of Sines

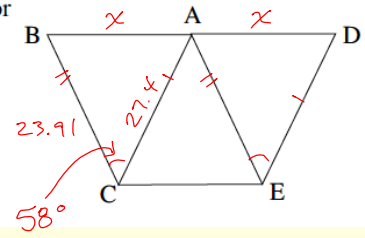
11. The diagram shows a parallelogram. Find the length of the longer of the two diagonals.



$180° - 43°$

Now use Law of Cosines

13. The diagram shows a part of the support structure for a tower. The main parts are two identical triangles, ABC and ADE.
AC = DE = 27.4cm and BC = AE = 23.91cm
The angles ACB and AED are 58°.
Find the distance BD. $= 2x$



Law of Cosines.

15. A triangular cross-country running track begins with the runners running North for 2050 metres. The runners then turn right and run for 5341 metres on a bearing of 083° true. Finally, the runners make a turn to the right and run directly back to the starting point.

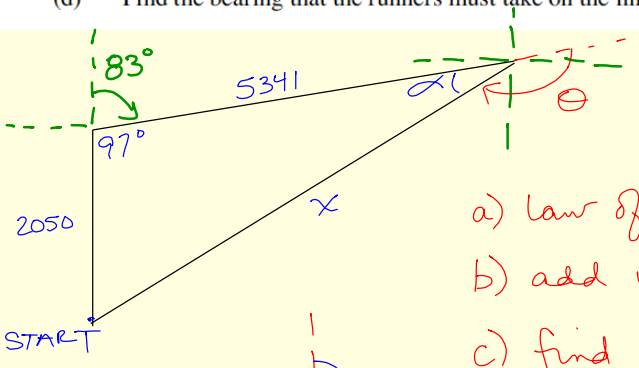
(a) Find the length of the final leg of the run.

(b) Find the total distance of the run.

(c) What is the angle through which the runners must turn to start the final leg of the race?

(d) Find the bearing that the runners must take on the final leg of the race.

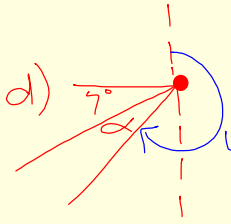
Answers in the back are correct !!



a) Law of Cosines, find x

b) add up sides

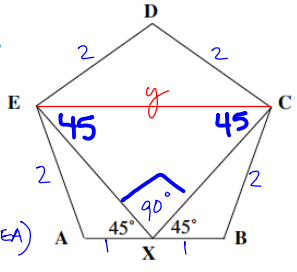
c) find α using Law of Sines, then: θ = 180 − α



17. A sandpit in the shape of a pentagon ABCDE is to be built in such a way that each of its sides are of equal length, but its angles are not all equal.

The pentagon is symmetrical about DX, where X is the midpoint of AB.

The angle AXE and BXC are both 45° and each side is 2 m long.



(a) Find $\angle XEA$. (Law of Sines)

(b) Find the length of EX. Find ∠A (180 − 45 − ∠XEA)

(c) How much sand is required if the sandpit is 30 cm deep? Give your answer to three decimal place.

then use Law of Cosines to find EX

c) First find y. Isosceles Rt Δ

30 cm deep.

then V = (Sum the Δ areas)(0.3 m)

HW: Law of Sines Construction WS

Use construction tools to accurately draw each triangle, then solve.